

1.0 INTRODUCTION

The Environmental Protection Agency (EPA) and our technical review contractor PRC Environmental Management, Inc. (PRC) have reviewed the draft phase Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)/Remedial Investigation (RI) work plan, Rocky Flats Plant (RFP), 700 Area, operable unit (OU) number 8 (work plan) which was submitted by the U.S. Department of Energy (DOE). This work plan is dated May 1992 and was submitted in revised form on June 22, 1992. Our combined comments on the subject work plan follow. The general comments address the overall scope of the work plan. Specific comments address the technical merit of particular items. Specific comments have been grouped by chapter and keyed to specific statements by section and page. Comments concerning Appendices A-G are included in the section which references them.

2.0 GENERAL COMMENTS

1. The major elements expected in an RI/FS work plan (EPA, 1988) are all present. The focus of the work plan appears to be in agreement with Section VI and Section VII of attachment 2 to the Interagency Agreement (IAG) (DOE/EPA/CDH, 1991). The IAG's focus for the Phase I work plan is to identify sources and define the nature and extent of contamination in affected media. Contaminant fate and transport are expected to be covered in a later phase of RI field work.
2. The work plan also has dropped IHSS 150.5 from consideration, based on the Historic Release Report (HRR) (DOE, 1992) conclusion that IHSS 150.5 is the same as IHSS 123.2. Since IHSS 123.2 has been moved to OU 9, DOE decided that there is no longer any need to discuss IHSS 150.5. The conclusion by DOE may be correct, but until EPA officially approves this the HRR and a procedure for disposition of IHSSs incorrectly identified in the IAG, dropping IHSS 150.5 is premature.
3. There is confusion in the work plan concerning IHSSs 150.6 and 150.7. Both IHSSs were eliminated without explanation from Section 2 (Site Characterization), Table 2.1, and Table 2.2 of the work plan. Yet these two IHSSs were included in the Section 5 (Data Needs and Data Quality Objectives) and Section 6 (Field Sampling Plan) discussion. A site characterization discussion for both IHSSs should be included in the work plan.
4. After 14 IHSSs were transferred to OU 9 and three IHSSs (IHSS 150.5, 150.6, and 150.7) were dropped for various reasons, 21 IHSSs were eventually included in the site characterization discussion of Section 2. None of the boundary descriptions for the 21 IHSSs agree with what was shown on the original IAG map. Boundary descriptions for all IHSSs except 150.3, 151, 163.1, 163.2 and 184 were changed in the HRR. Then boundary descriptions for all IHSSs except 137, 138, and 173 (including changes to 150.3, 151, 163.1, 163.2 and 184) were changed again for the work plan, which does not present a convincing case for these boundaries being more accurate than those offered by either the IAG or the HRR. A more adequate explanation would include an IHSS-by-IHSS discussion of how and why boundaries were developed for the IAG and subsequently reconfigured in the HRR and work plan. Additional comments concerning specific IHSSs are given in Section 2 of this report.
5. Although the new potential areas of concern (PACs) and under building contamination (UBCs) presented in the HRR are listed in Table 2.2, they have not been integrated into the work plan. An overall scheme for integrating these areas into the IAG investigations remains to be worked out. This work plan will

then need to be revised accordingly either through amendment or technical memorandum.

6. EPA RI/FS guidance (EPA, 1988) recommends that all existing data be used to provide a better early understanding of the nature and extent of contamination. Several data sources listed in Table 5 of the IAG have only been referenced on page 4.1. of the work plan and/or in Appendix B. These data sources, and the IHSSs for which they are referenced, include the following:

- Areal Radiological Measuring System (ARMS) Survey (for IHSSs 118.1, 118.2, 173)
- Report(s) documenting the radiometric survey conducted from 1975-1983 (for IHSSs 123.1, 125, 144, 150.1 through 150.8, 163.1, 163.2)
- Information substantiating this unit as a SWMU subject to HSWA corrective action (IHSS 173)
- Results of routine radiation surveys conducted in Building 991 (IHSS 173)

These data sources should be included in the work plan and analyzed in Section 2.4, as was done for data from nearby wells, streams, and stream sediments.

7. Section 2.4 (Nature and Extent of Contamination) contains a detailed review of the available data for OU 8, which consist mainly of release information from the HRR and data from soil and ground-water samples collected as part of sitewide monitoring programs. These data provide only general information regarding the nature of soil and ground water contamination at OU 8. Nevertheless, results of these investigations should be incorporated in the proper portions of Section 5.0 (Data Quality Objectives).

8. The chemical-specific benchmark tables submitted in Section 3.0 of this work plan are the same tables submitted by DOE to EPA on March 25, 1992. The Final OU 8 work plan must incorporate EPA's requested revisions to these tables. Section 3.0 did not contain any location- or action-specific ARARs; these two categories of ARARs should also be discussed in the work plan.

9. The outline of the data quality objectives (DQOs) section of the OU 8 work plan (Section 5.0) generally follows EPA guidance for the preparation of DQOs (EPA, 1987a,b). However, many of the sections in the DQO narrative contain only minimal information about the work to be performed at OU 8. The DQO section of the OU 8 work plan requires significant improvement before it is adequate to direct the planned OU 8 field work.

10. The EPA has requested that DOE and EG&G evaluate the existing site-wide air monitoring network Radioactive Ambient Air Monitoring Program (RAAMP). This work plan does not discuss this pending RAAMP evaluation. This survey should be completed before any new air monitors are proposed for OU 8. The survey may determine that the existing RAAMP is sufficient to characterize air emissions from OU 8, or that more monitors are needed. In addition, this survey should also help:

- Justify the location of ambient air samplers 2 and 4 miles from RFP, or provide data to suggest a more appropriate location of ambient air monitors
- Provide data to justify the location and number of the 25 samplers located within and concentrated near the main RFP facilities, the 14 that border along major highways to the north, south, east, and west, and the 14 located in metropolitan areas in the RFP vicinity
- Ascertain the conditions of typical and maximum atmospheric input from OU 8 IHSSs
- Identify OU 8 IHSS air pathways

11. While the OU 8 work plan for the human health risk assessment (HHRA) includes the essential components presented in the Risk Assessment Guidance for Superfund (RAGS) (EPA, 1989a), it does not include pertinent information necessary for a detailed review. For example, future land use assumptions have not been adequately defined and, consequently, exposure scenarios cannot be rigorously assessed.

12. In contrast to most areas of Section 8.0 (Human Health Risk Assessment Plan), which are vaguely outlined, specific criteria for the selection of contaminants of concern (COCs) is presented in sufficient detail. However, this section still requires extensive revision. The criteria proposed for selecting chemicals of potential concern in the HHRA do not correspond to those endorsed by the EPA in RAGS (1989a). Furthermore, the hierarchy of selection criteria in the decision-making process presented in the flow diagram should be rearranged. In its current form, it is possible that human carcinogens could be prematurely eliminated from the risk assessment.

13. The work plan specifies that any ecotoxicological work will be completed after data from the soil, sediment, and surface water sampling programs have been evaluated, and only if two of three conditions exist at OU 8. Ecotoxicological studies should not be undertaken outside of those specified conditions without regulatory approval.

14. The most general shortcoming of this plan is that it fails to consider the Protected Area IM/IRA now in development, or other ongoing activities (such as the reevaluation of the industrial area surface water monitoring program) which makes implementation as written very unlikely. In combination with DOE's apparent lack of commitment to the IAG as documented in other correspondence, this failure reduces the work plan to a paperwork exercise which achieves only superficial compliance with established milestones. Until and unless this work plan can be integrated into DOE's overall approach to the Transition, D&D, and Environmental Restoration of Rocky Flats, EPA sees no reason to grant approval of it.

3.0 SPECIFIC COMMENTS

Section 1.0 - INTRODUCTION

1. Section 1.6.2. Page 1-8. The statement that "the majority of residential use within 5 miles of RFP is located northwest, west, southwest, and south of the existing RFP" appears to be incorrect. The population distribution is depicted differently in Figure 1-4. The text should be corrected.

2. Section 1.6.7. Page 1-18. Many of the geologic data to be presented in Appendix C appear to be missing. Footnotes should be added to explain why so many wells have no geologic data associated with them.

3. Section 1.6.7. Figure 1-14. This figure, surficial geology of OU 8 area, is difficult to read. Geologic contacts and extent of deposits within the OU 8 area are not clearly presented. The figure should be presented with the contacts clearly labeled (See Figure 1-15).

4. Section 1.6.7. Table 1.5. Wells with missing or no data are indicated with "***" or "****," yet no footnote is provided regarding the meaning of these symbols, or why data is missing. A footnote should be provided to clarify these symbols and missing data. Also, information in this table does not correspond to data in Appendix D. For example, there are discrepancies between the table and Appendix D for well number 1986 regarding north and east coordinates, surface elevations, and total depth. Table 1.5 should accurately summarize the borehole data in Appendix D and explain any discrepancies.

5. Section 1.6.7.1. EG&G recently completed "Phase II Geologic Characterization Data Acquisition Surface Mapping" March 1992. This report was not referenced. Relevant information from the report should be used and referenced (for example, sedimentary petrology) in this section. Information in this report could be
discussions.

6. Section 1.6.7.2. Last Two Paragraphs, Pages 25 and 26. The paragraphs conclude that determination of ground-water flow direction is dependent on which interpretation (interpretation 1 or 2) of the Arapahoe Formation No. 1 Sandstone Deposition is used. Interpretation 1 (single meandering stream channel) results in a north to south flow direction. Interpretation 2 (migrating multichannel and point bar deposits) results in a west to east flow direction. These observations are made in the work plan, yet no investigation methods are specified to determine which interpretation is feasible for the OU 8 area. Since an

objective of the work plan is to evaluate potential migration pathways, the means by which this question will be investigated and resolved should be explained in the work plan.

7. Figures 1-21 through 1-25. Borehole 3386 shown in Figure 1-22 does not correspond to the borehole log. The borehole log places the top of bedrock at 5,942.5 feet, while cross-section B-B at borehole 3386 places the top of bedrock at approximately 5,947 feet. All cross sections should accurately reflect the borehole log data used to construct them.

Section 2.0 - OPERABLE UNIT 8 SITE CHARACTERIZATION

1. Section 2.1, Page 2-1. The statement that the OU 2 Work Plan was "provisionally accepted" is out of date and incomplete. Many of the work plans for the other units listed have been reviewed and/or approved. The impact of these other investigations on execution of the OU 8 Work Plan will be small compared to that of the PA IM/IRA and other ongoing activities such as DOEs unilateral rescheduling of IAG activities. The impact of these on the investigation and configuration of OU 8 is what really needs to be discussed here.

2. Section 2.3.1, Page 2-4. According to Table 5 in the IAG there is an ARMS survey available which documents elevated gamma radiation exposure rates for sites 118.1 and 118.2. Since the IAG shows a different location than the work plan, the text should explain why the IAG location and the ARMS survey should be discounted. Also, the map provided in Appendix B for IHSS 118.1 in the correspondence dated April 14, 1992 is unreadable.

3. Section 2.3.3, Page 2-6. The boundaries of IHSS 123.1 should extend all the way to Pond B-1 as shown in the HRR. The work plan states that the boundaries should be shortened because the spill entered a pipeline at the intersection of Sage Avenue and Ninth Street. However, there is no discussion of the type, integrity, or condition of the pipeline, or the distance upstream of Pond B-1 the pipe daylights. This information should be provided before shortening the boundaries.

4. Section 2.3.4, Page 2-8. The boundaries of IHSS 135 may need to be extended to North Walnut Creek. The text states that, water from the cooling tower was allowed to drain into North Walnut Creek. This could have allowed sediments to be contaminated along the drainage path to North Walnut Creek.

5. Section 2.3.5, Page 2-8. The reference to Figure 3-1 appears to be incorrect. There is no Figure 3-1 in the work plan. In addition, here and elsewhere in this section, it is unclear what "it has been proposed" means. Where was it proposed, or does this constitute the proposal? If so, say so, and approval of the

work plan will formalize the changes in boundaries for the purposes of the investigation.

6. Section 2.3.6, Page 2-9. According to the HRR, on December 8, 1976, about 400 gallons of building 779 cooling tower water containing chromium and some radioactivity leaked into a storm drain near building 779. It subsequently flowed toward collection trench number 6. This storm drain should be included in IHSS 138 boundaries.

7. Section 2.3.7, Page 2-10. Please specify if the "additional" tanks are to be addressed in the FSP or if they are not being "proposed" to be added to the IHSS.

8. Section 2.3.21, Page 2-23, and 2-24. Boundaries of IHSS 172 need to be expanded to include the ditch along the northern side of Central Avenue. In describing cleanup activities the HRR uses words such as "cleaned up," "diluted," and "washed down." There is no indication of whether cleanup water was contained. The work plan also states that "an unknown amount of low level material spread to the ditch along the northern side of Central Avenue as a result of this spill."

9. Section 2.4.1.1, Page 2-31, Paragraph 3. This paragraph discusses the location of boreholes upgradient and downgradient from IHSS 118.1. It states that the nearest borehole is P114689. However, borehole P114689 is not shown on Figure 2-2. This borehole should be added to the figure or the reference in the text should be corrected.

10. Section 2.4.1.2, Page 2-36, Paragraph 1. This paragraph discusses ground-water samples from well 2386 and states that the data are presented in Table 2.12. Table 2.12 contains data for well P218080. Also, no data table for well 2386 was found in any of the data tables.

11. Section 2.4.1.6, Page 2-10, Paragraph 1. This paragraph discusses results from well P209089 and refers to Table 2.2.4. This appears to be an incorrect citation. Table 2.24 contains data from well 219189. This discrepancy should be corrected.

12. Section 2.5.2.1, Pages 2-94 to 2-96. Group II contaminant sources - releases associated with fires and explosions - were not discussed in this section. There are several IHSSs associated with these categories of contaminant sources, and a discussion should therefore be provided. In addition, only soils are discussed as a secondary source. Discussion of all secondary sources (see Figure 2.5.2) should be provided.

13. Section 2.5.3.1, Page 2-99. The description of specific IHSSs associated with Group I contaminant sources does not include IHSSs 150.4 and 150.5, but these two IHSSs are shown in

Group I in Figure 2.5-2. These IHSSs should be included in this description section.

14. Section 2.5.3.1, Figure 2.5-3. Surface water is not listed as a secondary source. However, Section 2.5.3.1.1, (secondary sources), states surface water should be considered as a secondary source. Therefore, surface water should be added to Figure 2.5-3.

15. Section 2.5.3.1.1, Page 2-102. A description of the contaminant source and release mechanism for IHSS 150.4 was not provided. IHSS 150.4 should be included in this section.

16. Figures 2.5-4 and 2.5-5. These figures do not include a conceptual drawing of the possible sandstone channel shown in Figure 2.5-3, or the possible migration of contaminants through the channel. Section 1.6.7.2 includes two interpretations of a sandstone channel passing under the OU 8 area, and each one may be a possible contaminant migration route. This channel should be accounted for in the conceptual models.

17. Section 2.5.3.3, and Figure 2.5-2. IHSS 151 is not listed in either this section or Figure 2.5.2, but is listed in Section 2.5.3.3.1. IHSS 151 should be added to Section 2.5.3.3 and Figure 2.5-2 or an explanation provided of why this is not considered appropriate.

18. Table 2.34. The heading for Table 2.34 indicates that the table was developed for OU 13. The table should be redeveloped to reflect statistics appropriate for OU 8.

Section 3.0 - ROCKY FLATS PLANT CHEMICAL SPECIFIC BENCHMARKS

No specific comments are made concerning this section.

Section 4.0 - RFI/RI TASKS

1. Section 4-3, Page 4.3. One of the activities to be performed during Phase I RFI/RI activities is missing. The first paragraph on page 4-3 states that three types of activities will be performed during the Phase I field investigation. However, only two are listed, screening activities and sampling activities.

Section 5.0 - DATA QUALITY NEEDS AND DATA QUALITY OBJECTIVES

1. Section 5.1.3.1, Page 5.4. If a dispersion model is expected to be used to determine ambient air concentrations for organics, a justification for using the model, as opposed to measuring, needs to be provided.

2. Section 5.1.3.1, Page 5-5, first paragraph. The work plan states that the RFP 61-meter meteorological tower data will not

be suitable for atmospheric dispersion modeling. If these data are not suitable for atmospheric dispersion modeling, the work plan should describe how the data required to support dispersion model-derived ambient air concentrations. If dispersion models are to be used (as suggested on Page 5-8), then adequate meteorological data must be obtainable. It is unclear if the required meteorological data are available (Page 5-5).

3. Section 5.1.3.1, Page 5-5, last paragraph. The work plan discusses both RFP samplers and RAAMP samplers. It is unclear whether these samplers are the same or different. Also, Page 5-5 of the work plan states "Samplers are operated on a schedule of one day every sixth day," while Page 5-6 states that, "During 1990, filters were also collected biweekly from all RFP samplers."

4. Section 5.2.1.1, Page 5-10. This section appears within Section 5.2.1, Stage 1 identification of decision types. It provides a list of data and users, but does not discuss the role or types of decisions each entity will be responsible for in the RI process. The role of listed agencies in planning remedial activities is unclear. Additionally, EPA guidance (EPA, 1987a,b) requires that this section discuss which agencies are the primary data end users and which are secondary data end users.

5. Page 5-15, Paragraph 3. This paragraph discusses levels of concern but these levels are not included in Table 5.7. Additionally, the levels of concern should be related to ARARs and HHRA based clean up levels. An additional table should be provided if necessary.

6. Page 5-19, Paragraph 1. This paragraph references Table 5-10. There is no Table 5-10. This citation should be corrected or the missing table should be added.

7. Table 5.7, Page 2 and 4. This table describes the planned surface scrapes and borehole soil sampling locations. The analyte lists include only total uranium. However, the IAG states that isotopic uranium ratios be provided for several IHSSs. Isotopic analysis of uranium should be added or an explanation for its absence provided.

8. Table 5.7, Page 6. This table provides information on the planned shallow soil sampling. However, it is unclear why potentially contaminated soil associated with cooling water blowdown from Building 779 (IHSS 138) is being analyzed for radionuclides when potentially contaminated soil associated with cooling water blowdown from Buildings 774 and 374 (IHSS 137 and 135) is not. This should be clarified in the text or the table.

Section 6.0 - FIELD SAMPLING PLAN

1. Page 6-1, Paragraph 2. The rationale to select the analyses (sic) of concern does not discuss whether the results of the nature and extent of contamination section (Section 2.4) were used to form this list. The text should discuss the use of the nature and extent of contamination results in this section.
2. Section 6.3, Page 6-8. This section discusses the use of RFP-approved SOPs for the RFI/RI work at OU 8. However, it states that several SOPs are still in the development stage. It is unclear how new SOPs will be approved before being incorporated in the work plan. This should be clarified in this section.
3. Page 6-14, Paragraph 3. Soil sampling beneath asphalt- or concrete- covered areas is presented as being limited to grab samples. These sites could have been disturbed or had additional soil or gravel added to them before paving. Therefore, some soil profile sampling should be conducted to accurately characterize the soil beneath asphalt- and concrete-covered areas .
4. Page 6-15, Paragraph 1. This paragraph states that the high purity germanium (HPGe) detector will detect concentrations of gamma-emitting off-site radionuclides in soil samples. It is unclear from this discussion how off-site versus RFP-derived radionuclides will be differentiated. The text should be clarified accordingly.
5. Page 6-15, Paragraph 3. It is stated here that if the information provided by the HPGe does not appear adequate for characterization purposes, the field instrument for detection of low-energy radiation (FIDLER) or the Geiger-Muller (GM) shielded pancake-type detector will be used. It is unclear from this paragraph if the SOP for HPGe operation will provide guidelines for its applicability. This should be clarified in this paragraph or the SOP should be included in the final work plan.
6. Page 6-22, Paragraph 1. Besides collecting soil for leaching tests, no other geotechnical data is scheduled from the soil borings. Geotechnical data such as mineralogical composition, grain size distribution, total organic carbon (TOC), cation exchange capacity, and soil pH should be collected so that bulk density, specific density, porosity, and saturated hydraulic conductivity can be calculated.
7. Page 6-22, Paragraph 3. Because of the confined conditions in the 800 area, a description of the drilling equipment should be provided. Additionally, because of the expense involved in drilling new monitoring wells, DOE should consider developing some of these sampling wells to monitoring wells.

8. Table 6.1. This table describes modifications from certain IAG-specified work. It should include a rationale for all such modifications.

9. Table 6.1, Figure 6-4, IHSS 163.2. The proposed sampling plan for IHSS 163.2 should be revised. As outlined in Table 6.1 and Figure 6-4, the sampling plan is not adequate to discover the suspected location of a buried, 8-foot square slab. Section 2.4.1.20 states that an 8-foot square concrete slab potentially contaminated with americium is buried in IHSS 163.2. Table 6.1 and Figure 6-4 inconsistently describe where borings will be drilled. A radiation survey using HPGe will be conducted. Yet nowhere in the work plan is information provided to indicate that the borings will be continued until the slab is found or that the radiation survey will definitely be able to locate the slab. The work plan does not indicate that borings and the radiation survey will continue until the slab is found.

10. Table 6-2. The number of soil borings proposed for IHSSs 150.2, 150.3 and 150.7 appears to be lower than that required by the IAG. This discrepancy needs to be justified in the final work plan.

Section 7.0 - TASK SCHEDULE

1. Figure 7.1, Page 7-2. The schedule for item 5, EPA and CDE Approval of Final Work Plan, appears to be overly optimistic. It is unreasonable to expect approval the same day as submittal.

2. Figure 7.1. The meaning for item 7, EG&G/RFP/DOE review approval, is unclear. The referenced document for which this review and approval is sought should be clarified.

3. Figure 7.1. A listing of the interim deliverables to be provided between stages of implementation must be provided (perhaps in section 6.0) and this figure must indicate the submittal dates and account for the review processes expected to be applied to them.

4. Figure 7.1. Page 8.2 references four technical memoranda which will be prepared for review and approval related to the HHRA: contaminants of concern, exposure scenarios, fate and transport models, and toxicity values. Submittal dates, or at least submittal periods, should be included in Figure 7.1 for these documents.

Section 8.0 - HUMAN HEALTH RISK ASSESSMENT PLAN

1. Section 8.1.1, Page 8-2, Second Paragraph. The present work plan for OU 8 represents a general outline for conducting a HHRA. The technical memorandum that will subsequently be submitted to the EPA should, therefore, not just "outline how the most crucial

steps in the risk assessment will be performed." It should present comprehensive and detailed information that will be included in the risk assessment.

2. Section 8.1.1, Page 8-2, Second Paragraph. This section cites several DOE documents as sources of exposure and radiation dose. Although these documents may be helpful for some types of exposures, exposure parameters in DOE guidance are based on International Commission on Radiological Protection (ICRP) guidance. ICRP guidance provides protective radiologic standards for occupational exposures. Exposure assumptions that estimate radiologic exposure and dose in the general population should be used, as found in RAGS (EPA, 1989a), which specifically addresses differences in the general population. The exposure factors handbook should be used as the primary source for input parameters. Exposure factors independently derived in the HHRA must be submitted in the technical memorandum and approved by EPA prior to completion of the HHRA. The source of the data used to derive these values must be well documented and referenced.

3. Section 8.1.2, Page 8-4, Third Paragraph. Although DOE's current projection for future RFP land use is as an ecological preserve, it has not been firmly established in the form of a covenant or land-use restriction. Therefore, the conservative exposure assumptions that apply to a residential scenario should be used to estimate the potential risk to future on-site residents. This will establish an upper-bound risk estimate to compare current off-site residents and future industrial and ecological site workers.

4. Section 8.1.2, Page 8-5, Second Bullet. Exposure to volatile organic compounds should be included, together with the mentioned particulate phase, as a potential exposure pathway for nonradiological contaminants in surficial soils.

5. Section 8.2.1, Page 8-6. Plans to collect background data are conspicuously absent from the data collection section. Characterizing the background of inorganic chemicals is prerequisite to eliminating them from the HHRA. If background concentrations will be used to eliminate chemicals from the HHRA in selecting contaminants of concern (COCs), a full description of methods and locations should be included.

6. Section 8.2.1, Page 8-7, Bullets 7 and 8. Including field conditions and sample documentation, such as the chain of custody and SOPs, in the HHRA is not necessary. Although a site description and detailed information on sample locations should be included in the RFI/RI report, the two proposed sections will be extraneous to the HHRA. This information is best presented elsewhere in the RFI/RI report in sections prefacing the risk assessment.

7. Section 8.2.2, Page 8-8, Second Paragraph. All contaminants detected at least once should be included in the HHRA in the section containing a data summary of chemicals detected in each medium. It is unacceptable to state that if only a few tentatively identified chemicals (TICs) are reported, they will be excluded from the HHRA, whereas if numerous TICs are reported and "they appear related to the RFP", they will be carried through the HHRA. Decisions regarding the frequency of detection and the relationship of chemicals to the site cannot be made ahead of time. These decisions must be deferred until COCs are selected. During this stage, chemicals detected at less than a pre-established frequency of detection benchmark, usually set at 5 percent, can be eliminated from the risk assessment.

Furthermore, chemicals lacking toxicity values should not be unilaterally excluded from the risk assessment before EPA Region VIII toxicologists are notified. In the event that it is not possible to derive toxicity values for particular chemicals, a qualitative discussion of potential adverse effects is required.

8. Section 8.2.4, Page 8-9, First Paragraph. The criteria to select COCs should be included along with the list of COCs in the technical memorandum submitted for review and approval.

9. Page 8-9, Second Paragraph. It is not clear what "an anomalous area" is. As described, it appears to refer to a hot spot. This paragraph should be clarified and the term "anomalous" should be defined.

10. Section 8.2.4, Page 8-9, Figure 8-3. The procedure selecting COCs has major design flaws and violates the established principals in RAGS. No Class A carcinogens should be eliminated from the HHRA, even if the frequency of detection is less than 5 percent and the on-site concentration is not statistically different from background. The statement in the work plan that the carcinogenic screening step "does not eliminate a chemical from further consideration. Instead, it automatically identifies carcinogens for inclusion in the risk assessment, even if detected at low concentrations" is disingenuous, since potent human carcinogens could have been previously eliminated. This section must be revised in accordance with comments provided on the appropriate OU 1 HHRA Technical Memoranda.

Section 9.0 - ENVIRONMENTAL EVALUATION WORK PLAN

1. Table 9.1. The potential target taxa listed are not the same as have been identified in other work plans for the industrial area OUs. The table should be revised or deleted.

Section 10.0 - QA/QC PROCEDURES AND ADDENDUM

1. Section 10.1.12.1, Page 19. This section discusses field equipment to be used during the Phase I RFI/RI, including equipment for radiological surveys. However, it does not discuss the HPGe instrument. Some discussion of the HPGe instrument operation should be included in this section.

4.0 REFERENCES

- CDH, 1992. Letter dated April 21, 1992 from Colorado Department of Health and United States Environmental Protection Agency to Frazer Lockhart, U.S. Department of Energy, regarding Modification to Work in the IAG.
- DOE/EPA/IAG, 1991. Federal Facility Agreement and Consent Order. United States Environmental Protection Agency, Region VIII, and The State of Colorado, January 22, 1991.
- EPA, 1987a, Data Quality Objectives for Remedial Response Activities, Development Process: EPA/540/G-87/003, OSWER Directive 9355.0-7B.
- EPA, 1987b, Data Quality Objectives for Remedial Response Activities, Example Scenario: RI/FS Activities at a Site with Contaminated Soils and Groundwater: EPA/540/G-87/004, OSWER Directive 9355.0-7B.
- EPA, 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA: EPA/540/G-89/004, OSWER Directive 9355.3-01.
- EPA. 1989a. Risk Assessment Guidance for Superfund-Volume 1: Human health evaluation manual (Part A). Interim final. EPA/540/1-89/002. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, D.C.
- EPA. 1989b. Exposure Factors Handbook. EPA/600/8-89/043. U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Washington, D.C.